



# AEC-NASA TECH BRIEF



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## Inspection Criteria Ensure Quality Control of Parallel Gap Soldering

An investigation was conducted to establish process control and inspection criteria for parallel gap soldering of electrical connections. Testing was performed using gold-plated; hot-dip-tinned; ultrasonic-dip-tinned; and gold-plated, ultrasonic-dip-tinned leads consisting of a commercial iron/nickel/cobalt glass-sealing alloy. This lead material was selected because it is commonly used in ribbon form as "flat pack" leads and is generally considered difficult to solder. The solder connections were made to conductor-coated printed circuit boards.

The investigation has resulted in a set of recommendations for choice of parallel gap solder equipment, material preparation, process control, and visual inspection criteria to ensure reliable solder joints. When these recommendations are followed, parallel gap soldering is superior to hand soldering, especially in microminiature, high-density electronic modules. Proper application of the parallel gap soldering tech-

nique minimizes the problems of heat-dwell time; amount of solder to be used; solder bridging across adjacent conductors; damage to delicate components and flat pack circuitry; and delamination of conductors from the substrate.

### Note:

Complete details may be obtained from:  
Technology Utilization Officer  
Marshall Space Flight Center  
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### Patent status:

No patent action is contemplated by NASA.

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